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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/521,795	10/27/2005	Bernhard Nellessen	745691-35	1968
22204 7590 03/07/2007 NIXON PEABODY, LLP 401 9TH STREET, NW SUITE 900 WASHINGTON, DC 20004-2128			EXAMINER CORDRAY, DENNIS R	
			ART UNIT 1731	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		03/07/2007	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

# Office Action Summary

Application No.

10/521,795

Applicant(s)

NELLESSEN ET AL.

Examiner

Dennis Cordray

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 15 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-16 and 18-29 is/are rejected.
- 7) ☒ Claim(s) 6, 17 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicants amendments have overcome the objections to the claims.
2. Applicant's arguments, see pp 8-9, filed 12/15/2006, with respect to the rejections of claims 1-29 under 35 U.S.C. 112 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn.
3. Applicant's arguments, see pp 9-13, with respect to the rejections of claims 1-29 under 35 U.S.C. 103(a) have been fully considered and are persuasive. As argued on p 12, the Inada reference (6136766) pertains to much lower molecular weight siloxanes than the Mollet reference (4919754) and the dispersant of Inada would not be obvious to use in the process of Mollet et al. Therefore, the rejection has been withdrawn. However, upon further consideration, new grounds of rejection are made as detailed below.
4. With regard to the remarks, the following comments are provided in support of the current rejections. Applicant argues on p 10 that Mollett et al requires a resin precursor, cross linker and catalyst that are not required in the instant invention. The Claim language "comprising" used in the instant invention allows for other components to be present, thus the resin precursor, cross linker and catalyst of Mollet et al are not excluded by the instant claims.

Applicant also argues on p 10 that the complex reaction system of Mollett et al comprises hydro(-H) functional polysiloxanes that will inevitably react with at least some of the hydroxyl functions of the cellulosic fibers, which is undesirable for the diversified

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subsequent use of the recovered, deinked fibers. Mollett et al discloses method of deinking recycled waste cellulosic fibers for reuse in the paper industry (col 1, lines 9-15), thus the deinked material is usable to make papers. It is also noted that the polysiloxanes of the instant invention can comprise primarily (-H) functional groups ( $R^1$  can be hydrogen), so long as at least one substituents in the molecule is a Z group, which in its simplest form can be a methoxy group. The claimed polysiloxanes will thus also inevitably react with at least some of the hydroxyl functions of the cellulosic fibers. In any case, the instant claims are directed to the deinking method, not to any subsequent use of the fibers, and speculation as to future use of the fibers is not germane to the claimed subject matter.

Regarding the argument on pp 10-11 pertaining to the use of organo-tin containing compounds, the only environmental considerations mentioned in the instant Specification are deforestation (p 1, lines 5-7) and contaminants such as fillers, fine fibers and stickies (p 3, lines 12-21). In any case, the instant claims are directed to the deinking method, not to any contaminants produced thereby.

Applicant argues on p 13 that the Richmann reference does not disclose deinking by flotation. Richmann discloses a separation of the aggregated ink particles of a size greater than 10 microns by centrifugal cleaners (col 1, lines 45-50; col 6, Table 1 footnotes). Richmann also teaches that a particle size range from 0.5 to 15 microns can be efficiently separated by traditional methods of froth flotation and washing (col 1, lines 61-66). Thus, while not the preferred method of Richmann et al, it was generally

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known and would have been obvious to one of ordinary skill in the art to use flotation as a functionally equivalent option to separate the particles in the disclosed size range.

Applicant argues on p 13 that the Mollett and Richmann references fail to teach the specific organo-modified siloxanes recited in the claims. Claim 1 recites a very broad range of organo-modified siloxanes that is encompassed by the general disclosures of Mollett et al and Richmann et al. The evidence presented to support the very broad claimed range pertains to the use of the very specific polymer and addition rate:

- polydimethylsiloxane (from a claimed siloxane that can be hydro, alkyl, aryl, alkenyl, aralkyl, alkoxy, alkanoyloxy hydroxyl, ester and ether substituted);  
labeled Siloxane 1,
- having a specific molecular weight of approximately 60,000 (from a claimed range of 1,000 to 500,000 or from 10,000 to 100,000),
- with approximately 11% mole substitution (from a claimed range of at least one group Z per molecule)
- by a very specific group Z,  $-(\text{OCH}_2\text{H}_4)_{18}(\text{OCH}_3\text{H}_6)_{18}-$  (from a claimed Z comprising an amine, an amide, a carboxyl, an ester, an epoxy or  $-(\text{OCH}_p\text{H}_{2p})_q(\text{OCH}_r\text{H}_{2r})_s-$ , where p and r are 1 to 6 and q and s are from 1 to 400), and
- the polymer is added to the pulp in a specific amount of 0.3 wt % (from a claimed range of from 0.1 to 1 wt % or from 0.1 to 0.5 wt %).

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Other polymers, labeled Siloxanes 2-8, are distinguished by a particular percent of substitution of the siloxane groups (5, 10 or 15%) and a particular degree of polymerization (100, 300 and 500). No particular substituting group Z is mentioned and it is assumed by the Examiner that the same specific group is used as in Siloxane 1.

The polymers are Thus, out of the millions of possible polymers embodied by Claim 1, only eight specific polymers are represented by data. Representative comparisons are made only with a commercially available fatty acid based deinking preparation. No comparisons are provided with siloxanes outside of the claimed composition range or apparently using any other group Z than that discussed above. It is the Examiner's opinion that the experimental data provided are insufficient to demonstrate special properties for the broad claims over the prior art cited below.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. Claims 1-5, 7-16, 18, 22, 23-25 and 27-29 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Mollett et al (4919754).

Claims 1-5, 7-13, 18, 22, 24-25 and 27-29: Mollett et al discloses a method for deinking recycled pulp comprising pulping the waste paper in an aqueous suspension to which a deinking additive has been added and removing the detached ink by flotation (col 2, lines 13-24). The additive preferably comprises a curable resin precursor mixture of a dihydroxy poly(dialkyl)siloxane and a poly(alkylhydrosiloxane) (col 3, lines 3-8). The alkyl groups are preferably 1-4 carbons. The resin precursor is not substantive to the cellulosic fibers of the pulp (Abs). The relatively hydrophobic resin precursor is dispersed in water (thus forming an aqueous emulsion) using a water-soluble surfactant or dispersant, which can be a polyalkoxylated organopolysiloxane (col 3, lines 29-36, col 4, line 38). In an example, polydimethylsiloxanes are used as the resin precursor and polyethyleneoxy/polypropyleneoxy-functional polydimethylsiloxane as the dispersant (col 6, lines 15-22). The dispersant is present in an amount from 0.1 to 20% by weight of the resin precursor (col 3, lines 47-49). The resin precursor is added in an amount from 0.1 to 10% by weight of the pulp solids (col 4, lines 43-47). Thus the polyalkoxylated organopolysiloxane is added in an amount from 0.0001 to 2% by weight of the pulp solids, the range encompassing the claimed addition range. The resin precursor can be suspended in the pulping liquor (in the pulping stage) or added shortly before pulping (before the pulping stage) (col 4, lines 55-58). The structure of the polyalkoxylated organopolysiloxane polymers significantly overlays the claimed organo-

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modified polysiloxane polymer and will thus, in addition to acting as a dispersant, function as a deinking agent. At the least, the claimed organo-modified polysiloxane polymer would have been obvious to one of ordinary skill in the art from the disclosure of Mollett et al.

Mollett et al teaches that the pigment particles are removed by conventional means, such as froth flotation (col 2, lines 17-24).

Claim 14: The structure of the polysiloxane disclosed by Mollett et al significantly overlays the claimed organo-modified polysiloxane, thus has the claimed HLB or, at least, it would have been obvious to one of ordinary skill in the art to obtain the claimed HLB.

Claims 15-16: the resin precursor has a molecular weight from 5,000 to 70,000 (col 3, lines 14-15). It would have been obvious to one of ordinary skill in the art to use a similar molecular weight for the dispersant polyalkoxylated organopolysiloxane to make the dispersant more miscible with the resin precursor, as required by Mollett et al (col 3, lines 29-31).

Claim 23: In the absence of evidence showing special properties thereof, a gum-based self-emulsifying polysiloxane would have been obvious over the disclosure of Mollett et al since the ethoxylated polysiloxane is intended to be a dispersant.

6. Claims 1-5, 7-16, 18-19, 23-25 and 27-29 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Richmann et al (5248388).



Claims 11-5, 7-14, 18, 24-25 and 27-29: Richmann et al discloses the use of surfactants having an HLB from 0.5 to 10 for deinking of electrostatic printed wastepaper (Abstract). The surfactants include block copolymers of ethylene oxide and propylene oxide, alcohol ethoxylates and dimethylpolysiloxane ethoxylates (col 2, lines 18-22 and 38-54, col 3, lines 10-28; col 4, lines 42-46). Use of the disclosed surfactants allows the process to operate at ambient pH, thus alleviating the need for caustic or acid tanks in the mill environment (col 2, lines 38-43). The amount of surfactant added to the aqueous slurry of wastepaper is from 5-20 lb/ton of fiber or 0.25 to 1% by weight (Claim 13).

Richmann discloses a process for separation of aggregated ink particles of a size greater than 10 microns by centrifugal cleaners (col 1, lines 45-50; col 6, Table 1 footnotes). Richmann also teaches that a particle size range from 0.5 to 15 microns can be efficiently separated by traditional methods of froth flotation and washing (col 1, lines 61-66). Thus, while not the preferred method of Richmann et al, it was generally known and would have been obvious to one of ordinary skill in the art to use flotation as a functionally equivalent option to separate the particles in the size range disclosed.

Claims 15-16: The molecular weight of the dimethylpolysiloxane ethoxylates is from 600 to 20,000 (col 4, lines 42-46).

Claim 19: A mixture of dimethylpolysiloxane ethoxylates and copolymers of ethylene oxide and propylene oxide (polyether) would have been obvious to one of ordinary skill in the art, since both are disclosed for the same purpose, thus polyethers can be present. "It is prima facie obvious to combine two compositions each of which

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is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose... [T]he idea of combining them flows logically from their having been individually taught in the prior art." *In re Kerkhoven*, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980).

Claim 23: In the absence of evidence showing special properties thereof, a gum-based self-emulsifying polysiloxane would have been obvious over the disclosure of Richnamm et al to aid in the dispersion thereof into the pulp.

7. Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mollett et al or Richmann et al in view of Ishibashi et al (5228369).

Mollett et al and Richmann et al do not disclose the use of fatty acids in the process.

Ishibashi et al discloses a deinking process in which a mixture of fatty acids are used as the deinking agent (Abs). The ink particles are removed by flotation (col 1, lines 15-21). In one embodiment, the mixture comprises essentially of fatty acids having from 8 to 24 carbon atoms, with the average carbon number ranging from 12.7 to 22.5 and from 9.6% to 70.6% of the mixture consists of fatty acids having from 20 to 24 carbons (col 3, lines 7-15). Some specific examples of the fatty acids include lauric acid, myristic acid, palmitic acid, stearic acid and oleic acid, which overlay the claimed species (col 5, lines 3-11). The disclosure is not limited to the particular examples recited, but generally discloses acids having from 8 to 24 carbon atoms as well, which include the remainder of the claimed species, or, at least, it would have been obvious to

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one of ordinary skill in the art to use the claimed species in the absence of data showing special properties for specific acids.

In addition, applicant discloses commercially available fatty-acid based deinking agents, which would have been known to one of ordinary skill in the art at the time of the invention.

The art of Mollett et al, Richmann et al, Ishibashi et al and the instant invention are analogous as pertaining to deinking agents. For the reasons given in the rejection of Claim 19 above, it would have been obvious to one of ordinary skill in the art to use one or more fatty acids in the deinking process of Mollett et al or Richmann et al in view of Ishibashi et al as a functionally equivalent option.

***Allowable Subject Matter***

8. Claims 6 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The specific composition claimed is shown to result in significantly increased whiteness of deinked pulps over pulps treated with commercially available deinking agents (pp 8-10, Tables 1-2, Siloxane 1). In view of the provided data, the specific compositions claimed are not disclosed with sufficient specificity in the cited prior art to constitute anticipation, nor would they be obvious.

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**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Cordray whose telephone number is 571-272-8244. The examiner can normally be reached on M - F, 7:30 -4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
DRC

  
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